# 2016 STATE STRATEGY FOR THE STATE IMPLEMENTATION PLAN

## AIR RESOURCES BOARD

September 22, 2016

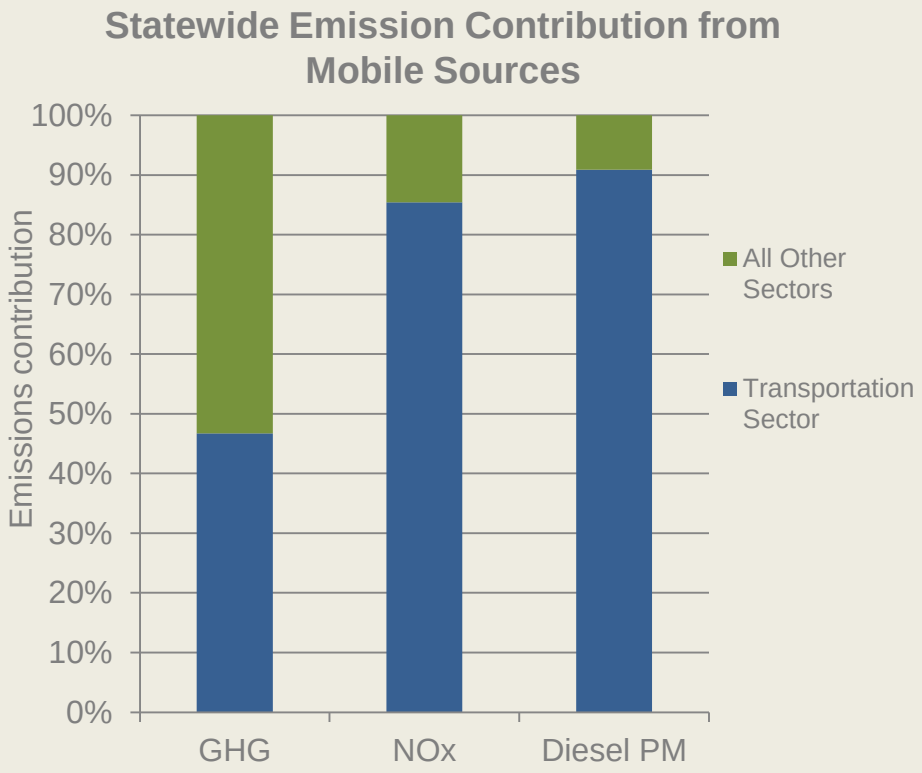
Sacramento, CA

# Today's Presentation

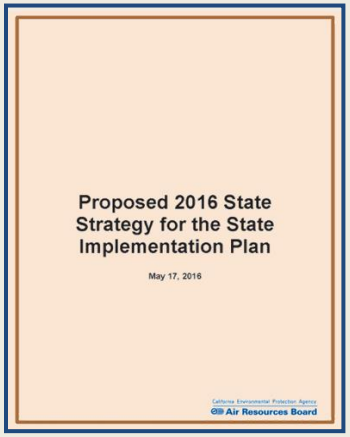
- Discussion of proposed State SIP Strategy released in May
- Key element of SIPs for South Coast and San Joaquin Valley
- Opportunity for stakeholder input and Board direction
- Final consideration in January

# Mobile Source Reductions are Key

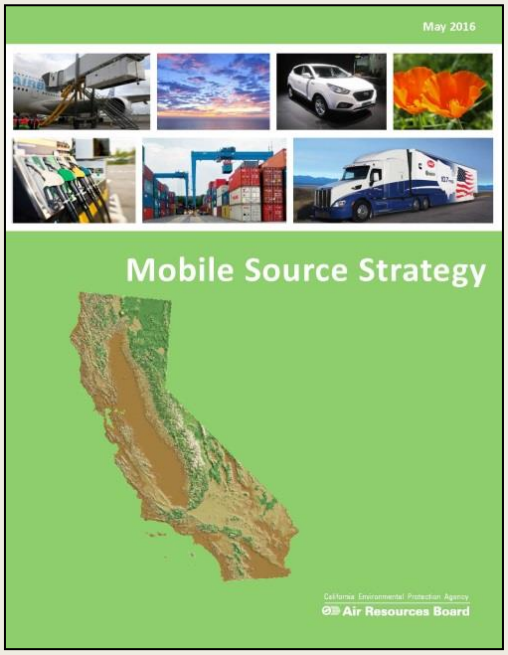
- Largest contributor to smog-forming, greenhouse gas, and diesel PM emissions
  - 80 percent of smog-forming NOx
  - 50 percent of greenhouse gases
  - 90 percent of toxic diesel PM
- Requires integrated planning to meet multiple goals



# Mobile Source Strategy
## Framework for Multiple Plans




Criteria Pollutants




GHG Emissions

2030 Target Scoping Plan


Toxic Risk Reduction

Black Carbon Emissions

# SIP DEVELOPMENT

# What is the SIP?

- Required by Clean Air Act
- Framework for meeting air quality standards
- Technical foundation for control strategy
- Legal commitment to achieve reductions

# South Coast
## SIP Development Process

- District's Air Quality Management Plan addresses stationary and area source measures
- State SIP Strategy addresses mobile sources, fuels, and consumer products
- District Board considers AQMP in December 2016
- ARB Board considers State SIP Strategy and District plan in January 2017

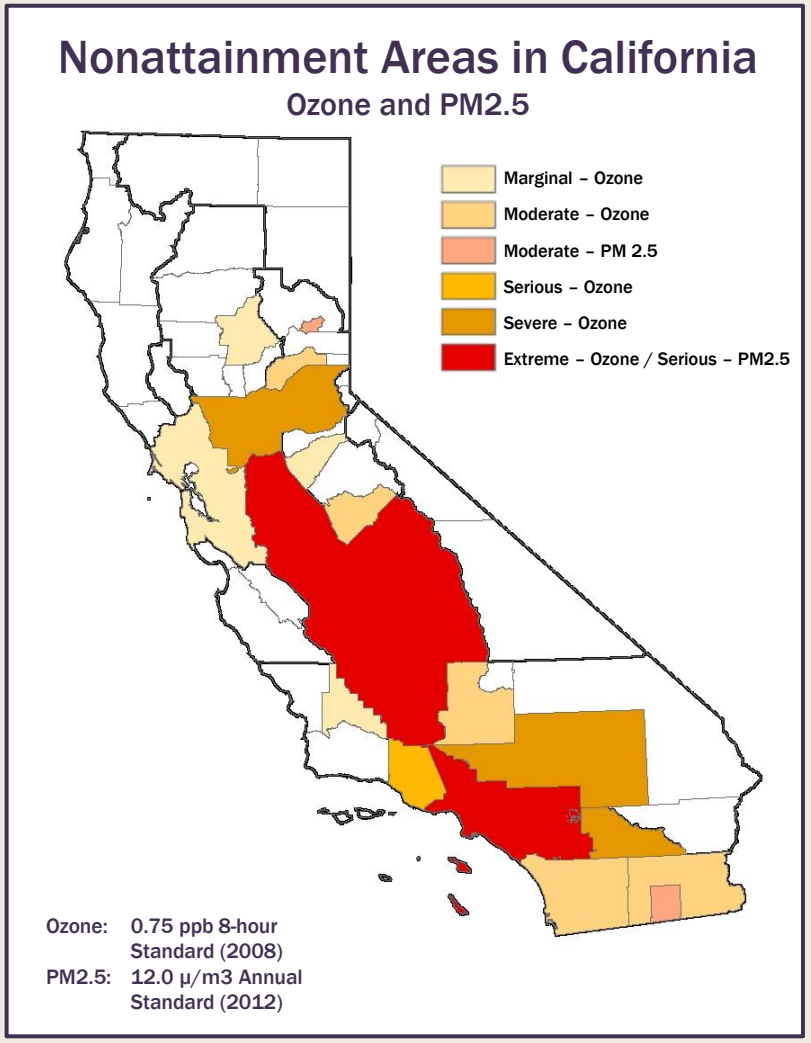
# San Joaquin Valley
## SIP Development Process

- ARB Board approved District's ozone plan in July
- State SIP Strategy provides additional reductions to accelerate progress
- Work ongoing to define PM2.5 attainment strategy
- Strategic use of incentives for mobile sources along with local District actions will be needed

# Components of the SIP

# Defining the Challenge

Air Quality Data

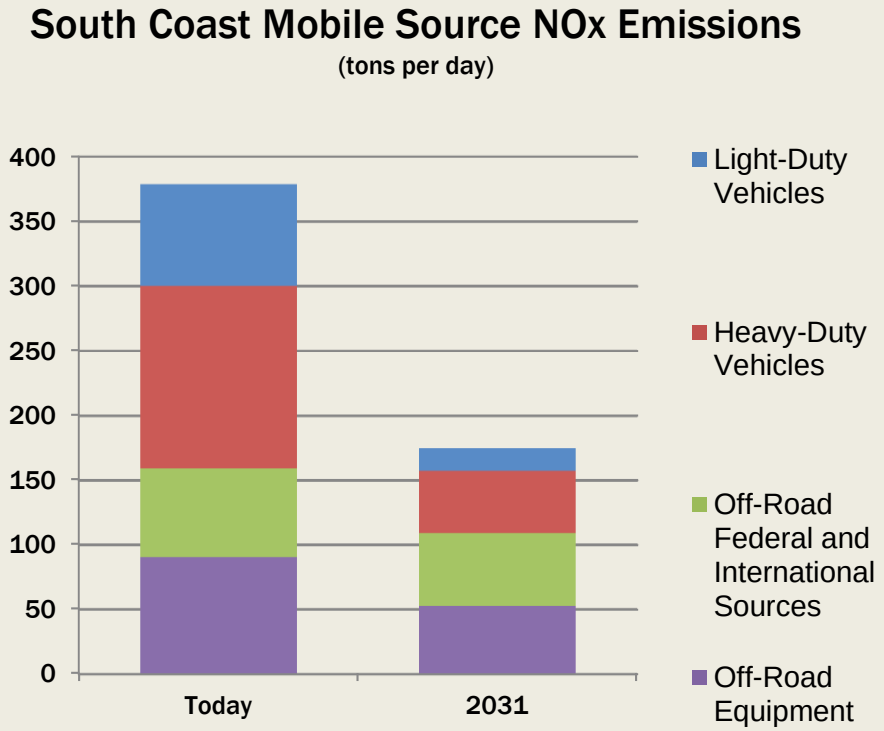



- Over 12 million Californians still breathing unhealthy air
- Most areas expected to attain standards by 2026
- Key challenges:
  - South Coast ozone
  - San Joaquin Valley PM2.5

# Identifying Key Sources

Emissions Inventory

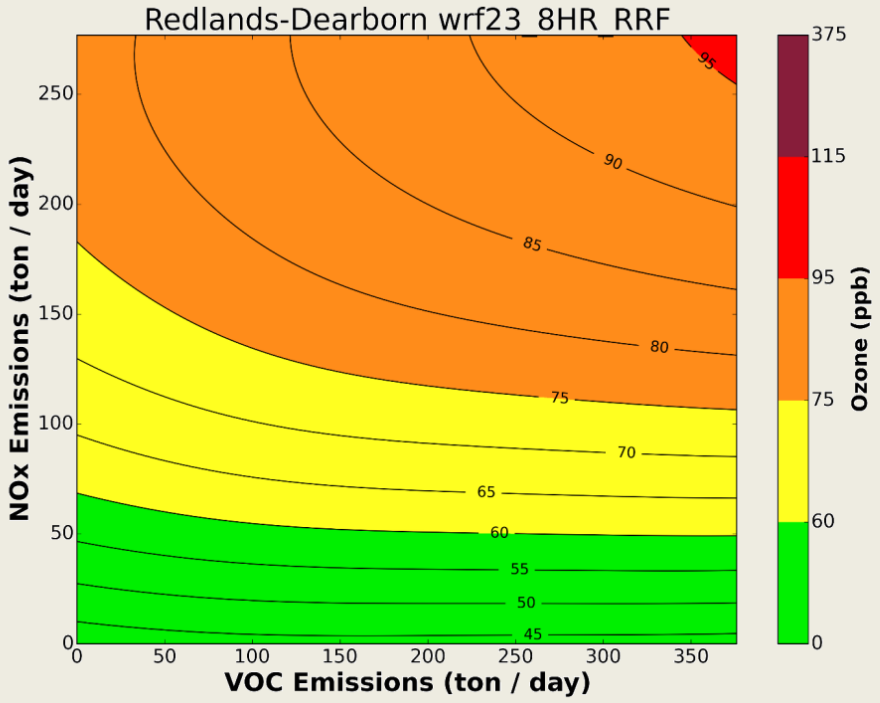
- Comprehensive accounting of emissions
- Current programs reduce NOx over 50 percent by 2031
- Heavy-duty trucks and federal sources remain largest contributors



# Incorporates Latest Science

Air Quality Modeling

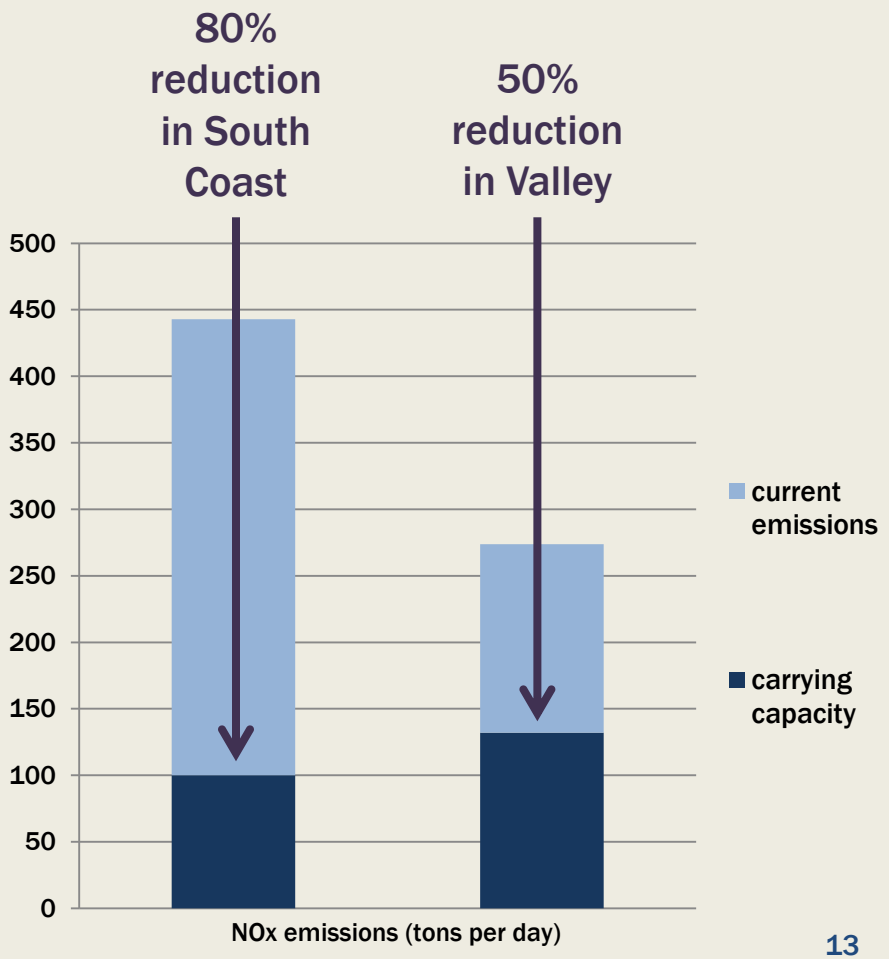
- Based on decades of research and field studies
- Determines magnitude of reductions needed for attainment
- Evaluates benefits of precursors controls
- Demonstrates need for deep NOx reductions



# Defines Attainment Needs

Air Quality Modeling

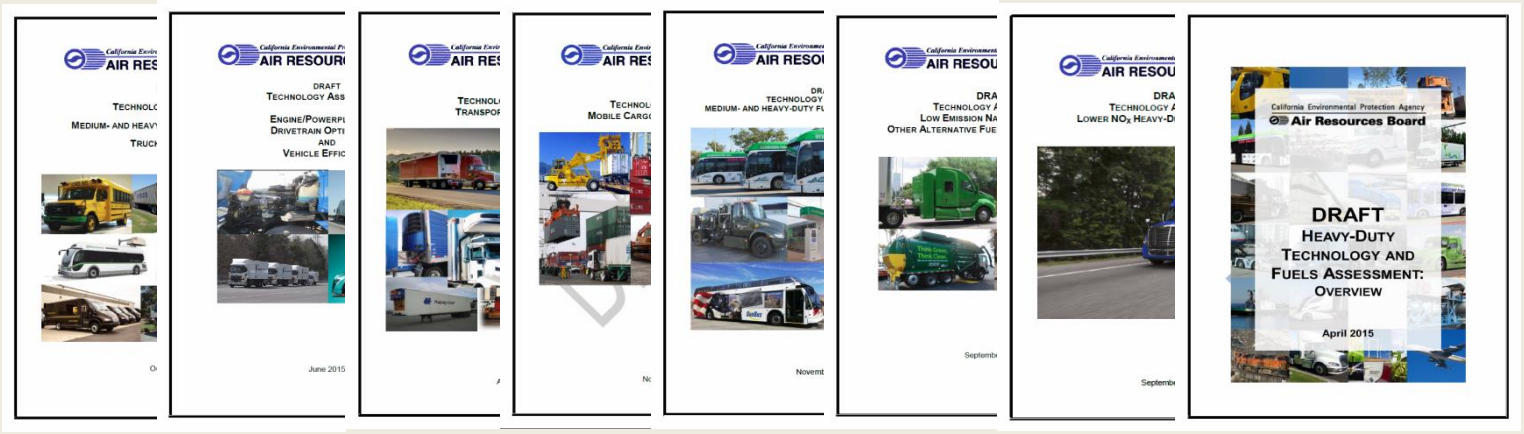
- 80 percent reduction in NOx emissions needed by 2031 to meet ozone standard in South Coast
- Current control program provides for ozone attainment in the San Joaquin Valley



# Identifying Today's Technologies

Technology Assessments

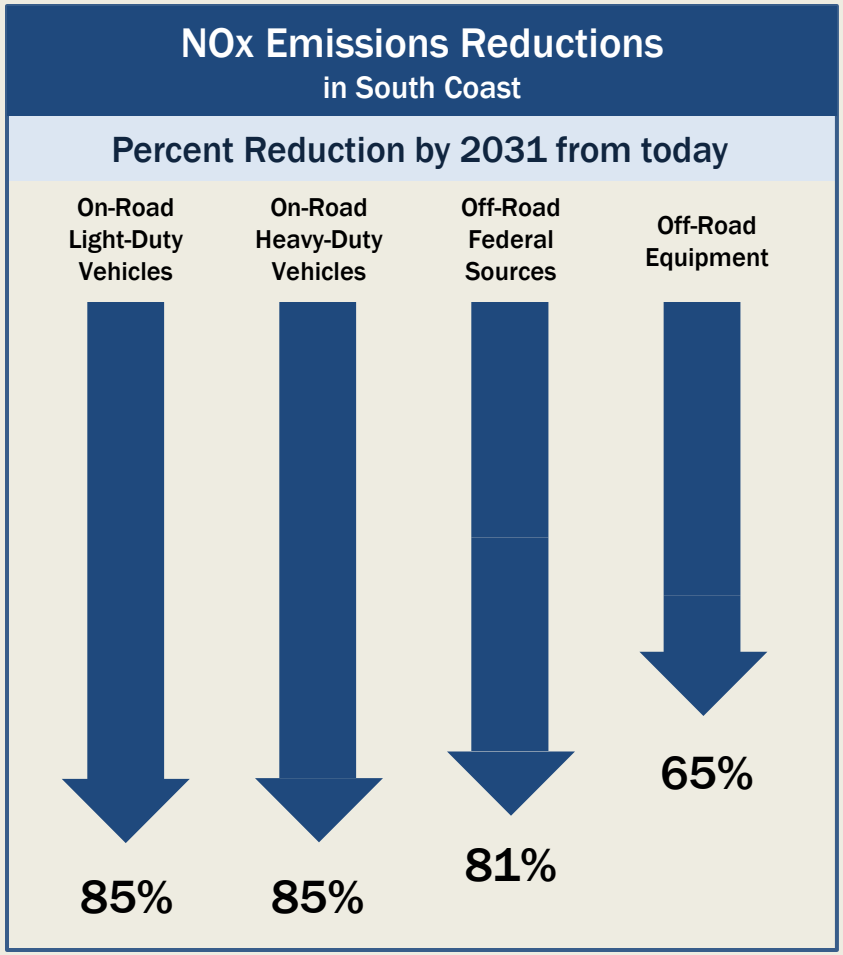
- Comprehensive review of technology status and feasibility
- Next generation of advanced technologies and fuels is here
  - Light-Duty ZEV commercialization well underway
  - Low-NOx truck engine has been certified
  - Heavy-duty zero emission technologies being demonstrated



# Proposed Strategy

Control Strategy

- Comprehensive set of actions for mobile sources and consumer products
- ARB's commitment to achieve reductions needed for attainment



# Structure of Commitment

Legal Commitment

- Commitment to achieve emission levels needed for attainment
  - Action on new measures according to implementation schedule
  - Aggregate emission reductions by specific dates
- Becomes enforceable upon EPA approval

# Implementation Schedule

Legal Commitment

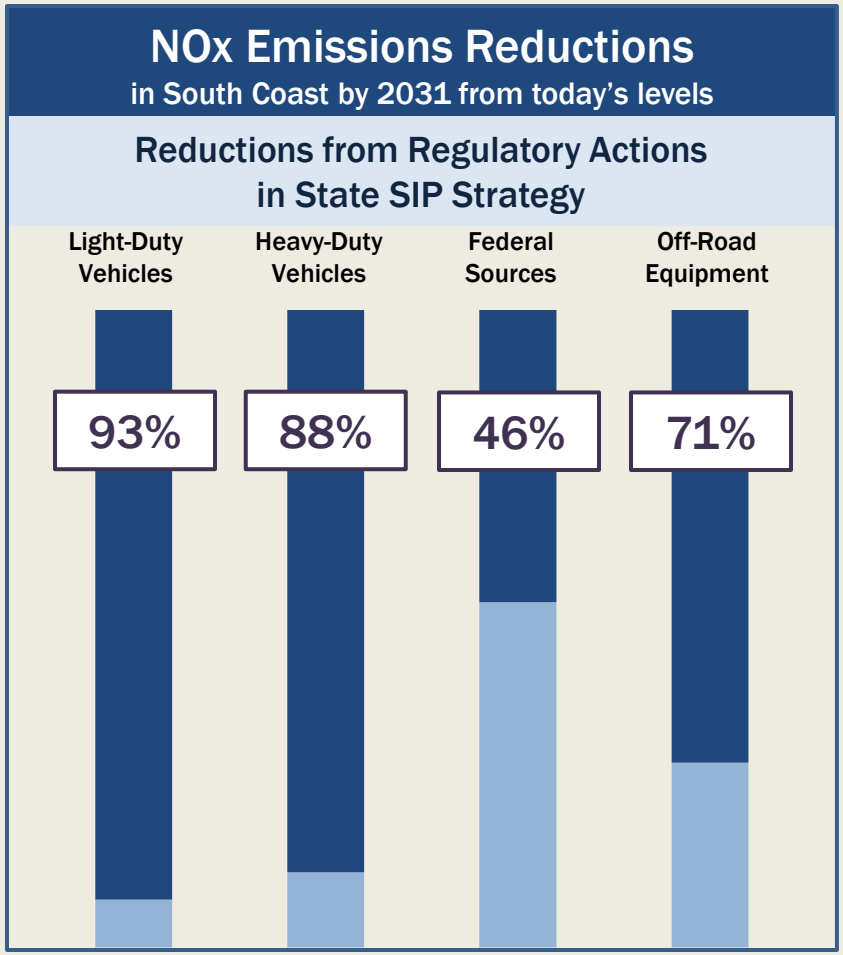
- Identifies timing of Board action and implementation dates for each measure
- Actions include:
  - Adopting regulations
  - Petitions for federal action
  - International advocacy

| Measures | Agency | Action | Implementation Begins |
|---|---|---|---|
| **On-Road Light-Duty** | | | |
| Advanced Clean Cars 2 | ARB | 2020 | 2026 |
| Lower In-Use Emission Performance Assessment | ARB / BAR | n/a | ongoing |
| Further Deployment of Cleaner Technologies | ARB / SCAQMD / U.S. EPA | ongoing | 2016 |
| **On-Road Heavy-Duty** | | | |
| Lower In-Use Emission Performance Level | ARB | 2016 | 2017 |
| Low-NOx Engine Standard – California Action | ARB | 2017 - 2019 | 2023 |
| Low-NOx Engine Standard – Federal Action | U.S. EPA | 2017 - 2019 | 2024 |
| Medium and Heavy-Duty GHG Phase 2 | ARB / U.S. EPA | 2016 - 2019 | 2018 |
| Advanced Clean Transit | ARB | 2017 | 2018 |
| Last Mile Delivery | ARB | 2018 | 2020 |
| Innovative Technology Certification Flexibility | ARB | 2016 | 2016 |
| Zero-Emission Airport Shuttle Buses | ARB | 2018 | 2023 |
| Incentive Funding to Achieve Further Emission Reductions from On-Road Heavy-Duty Vehicles | ARB / SCAQMD | ongoing | 2016 |
| Further Deployment of Cleaner Technologies | ARB / SCAQMD / U.S. EPA | ongoing | 2016 |
| **Off-Road Federal and International Sources** | | | |
| More Stringent National Locomotive Emission Standards | U.S. EPA | 2016 | 2023 |
| Tier 4 Vessel Standards | ARB / IMO | 2015 - 2018 | 2025 |
| Incentivize Low Emission Efficient Ship Visits | ARB | 2017 - 2018 | 2018 |
| At-Berth Regulation Amendments | ARB | 2017 - 2018 | 2022 |
| Further Deployment of Cleaner Technologies | ARB / SCAQMD / U.S. EPA | ongoing | 2016 |
| **Off-Road Equipment** | | | |
| Zero-Emission Off-Road Forklift Regulation Phase 1 | ARB | 2020 | 2023 |
| Zero-Emission Off-Road Emission Reduction Assessment | ARB | 2025 | -- |
| Zero-Emission Off-Road Worksite Emission Reduction Assessment | ARB | tbd | -- |
| Zero-Emission Airport Ground Support Equipment | ARB | 2018 | 2023 |
| Small Off-Road Engines | ARB | 2018 | 2022 |
| Transport Refrigeration Units Used for Cold Storage | ARB | 2017 - 2018 | 2020 |
| Low-Emission Diesel Requirement | ARB | by 2020 | 2023 |
| Further Deployment of Cleaner Technologies | ARB / SCAQMD / U.S. EPA | ongoing | 2016 |
| **Consumer Products** | | | |
| Consumer Products Program | ARB | 2019 - 2021 | 2020 |

# Emission Reductions

Legal Commitment

- Reductions from current control program and new measures
- Regulatory actions establish requirements for cleaner technologies
- Incentive programs ensure sufficient market penetration



# OVERVIEW OF PROPOSED MEASURES

# Mobile Source Actions

- ✓ Establish cleaner engine standards
- ✓ Increase penetration of zero emission technologies
- ✓ Ensure emission control durability
- ✓ Expand use of cleaner fuels
- ✓ Conduct pilot studies to demonstrate new technologies
- ✓ Incentivize deployment of cleanest technologies

# Heavy-Duty Trucks
## Establish Cleaner Engine Standards

- Establish new engine standards effectively 90 percent cleaner than today's standards
- Provide certification flexibility and ensure in-use performance
- Federal action essential to address interstate trucks operating in California

# Federal Action on Truck Standards

- Ongoing work with EPA to support development of standards
- South Coast and San Joaquin Valley petitions for federal action
- Recent EPA announcement on importance of pursuing harmonized national strategy

# Federal and International Sources
## Establish Cleaner Engine Standards

### More Stringent Locomotive Emission Standards

- Petition for national Tier 5 engine standards for new locomotives
- Stricter standards for remanufactured locomotives

### Tier 4 Vessel Standards

- Advocate with international partners for stricter marine vessel standards

# Passenger Vehicles
## Increase Penetration of ZEVs

- Build on current Advanced Clean Cars program
- Continue expansion of ZEV market beyond 2026
- Increase stringency of fleet-wide emission standards
- Ensure in-use performance

# Heavy-Duty Trucks
## Introduce ZEVs in Targeted Applications

### Advanced Clean Transit

- Continue transition to advanced technologies
- Ensure benefits in disadvantaged communities and maintain transit service

### Last Mile Delivery

- Increase penetration of zero emission technologies
- Consider purchase and manufacturer requirements along with incentive and credit programs

# Off-Road Equipment
## Increase Use of Zero Emission Technologies

- Set requirements for key sectors:
  - Lawn and garden equipment
  - Transport refrigeration units
  - Forklifts
  - Airport ground support equipment
- Technology assessments to identify opportunities for additional reductions

# Incentivize Deployment of Cleanest Technologies

- Ensure sufficient penetration of cleanest technologies to meet attainment needs
  - Incentive programs
  - Further regulatory strategies
  - Increased system efficiencies
  - Intelligent transportation systems, autonomous and connected vehicles

# Cleaner Fuels
## Establish Low Emission Diesel Fuel Standard

- Replace 50 percent of conventional diesel with low emission diesel by 2031
- Meet primarily through renewable diesel
- Phased implementation would begin in South Coast

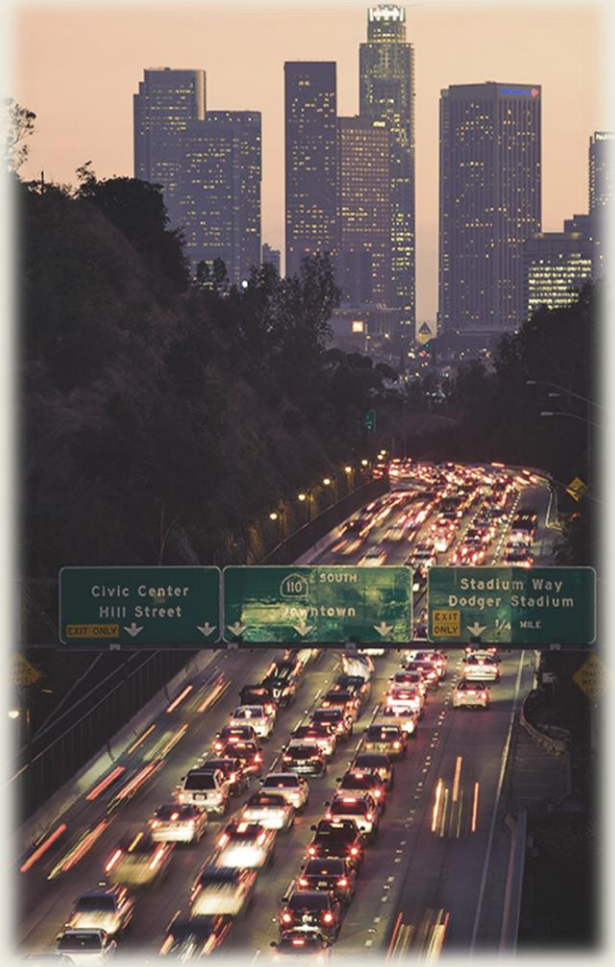
# Consumer Products
## Maintain Reductions from Current Program

- Evaluate categories with higher mass and reactivity
- Investigate expanding compliance options
- Review existing exemptions

# NEXT STEPS

# Implementing the Strategy

- Collaboration with Districts on comprehensive action plan
  - Identify funding needs and mechanisms
  - Maximize criteria pollutant and GHG co-benefits
- Discussion with EPA on incentive-based measures
- Coordination with other State agencies on infrastructure



# Economic Analysis

- Assessed Statewide costs and benefits on affected industries and the overall economy
- Total direct cost of proposed measures is approximately $60 billion over lifetime of strategy
- Strategy provides broad environmental and health benefits
  - Ozone and PM2.5 attainment
  - GHG emission reductions
  - Reduced toxics exposure

# Environmental Analysis

- Draft Environmental Analysis (EA) released for public comment
  - Potentially significant impacts found for some resource areas
- Staff will prepare responses to relevant comments received on Draft EA
  - Posted prior to January Board Hearing

# Moving Forward

- Board will consider SIP Strategy in January
- Staff will initiate actions for proposed measures
- After Board approval, SIPs submitted to EPA